



Hand in hand for tomorrow



Product data sheet

Programmable magnetic switches MMS 22-PI1

Programmable. Precise. Easy assembly.

Programmable magnetic switch MMS 22-PI1

A magnetic switch is used to monitor the status of automation components. They detect the approach of a magnet without contact and above a certain switching value, they put out a digital value. The switching value can be programmed.

Field of application

Used for monitoring gripping and rotary modules, as well as linear modules, and robot accessories. Magnetic switches from SCHUNK detect magnets without contact or wear, and are resistant to vibrations, dust and humidity. Magnetic switches are installed in slots, and thus do not produce any additional interfering contours. For connection with a digital input module (utilization categorie DC-12).

Advantages – Your benefits

Individual switching point – without interfering contours

The magnetic switch can be completely inserted, which means that no interfering contours arise due to overhanging sensor systems

Programmable within no time due to non-contact adjustment of the switching points and hysteresis

Adjustable hysteresis for precise position monitoring – even at very low strokes

Suitable for narrow installation spaces due to wired teaching with TeachTool plug

Version with LED display for control of the switching position directly at the sensor

Version with standard plug connector for fast and easy exchangeability of the extension cable

Very flexible cable in PUR version for a long service life

Installation into the sensor groove for space-saving, easy, and fast assembly on the product



Options and special information

High protection class: IP67 when plugged in, for use in clean or dusty environments or in case of contact with water. Operability in case of contact with other media (coolant, acids, bases, etc.) is often given, however cannot be guaranteed by SCHUNK.

Power supply: 10 – 30 V DC at < 10% residual ripple

Sources of interference: Sensors can be influenced by other magnetic fields in the immediate vicinity. Disturbing magnetic fields can be generated by motors, electric welders, permanent magnets or magnetized material (so-called soft magnets) such as hexagon socket wrenches, chips, etc.

Application example



① Actuator

② MMS 22-PI1 C-slot sensor

③ Magnet Teach Tool MT

SCHUNK offers more ...

The following components make the product even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.



Plug teaching tool



Sensor cables



Sensor distributor



SST sensor tester

① For more information on these products can be found on the following product pages or at [schunk.com](https://www.schunk.com).

MMS 22-PI1

Programmable magnetic switches

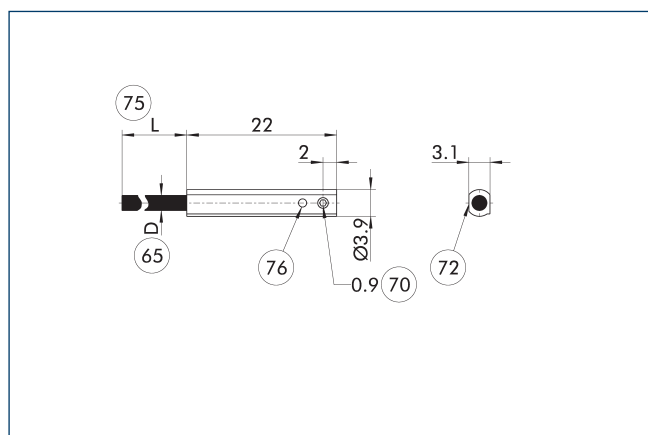


Technical data

Description		MMS 22-PI1-S-M8-PNP	MMS 22-PI1-S-M8-NPN	MMSK 22-PI1-S-PNP
ID		0301160	0301161	0301162
Operating principle				
Measuring principle		magnetic	magnetic	magnetic
Switching function		Closer	Closer	Closer
Type of switching		PNP	NPN	PNP
Number of switching points		1	1	1
Teach function		yes	yes	yes
General data				
typical switching time	[s]	0.001	0.001	0.001
Max. switching frequency	[Hz]	1000	1000	1000
Min./max. ambient temperature	[°C]	-20/80	-20/80	-20/80
LED display in sensor		yes	yes	yes
Electrical operating data				
Type of voltage		DC	DC	DC
Nominal voltage	[V]	24	24	24
Min./max. operating voltage	[V]	10/30	10/30	10/30
Voltage drop	[V]	1.5	1.5	1.5
Max. switching current	[A]	0.05	0.05	0.05
Short circuit protection		yes	yes	yes
Protected against polarity reversal		yes	yes	yes
Mechanical operating data				
Housing material		PA	PA	PA
Cable connector/cable end		M8 connector, 3-pin	M8 connector, 3-pin	open wire strands
Cable length L	[cm]	30	30	200
Cable diameter D	[mm]	2.2	2.2	2.2
Cable design (wire cross section/ number of wires)		3x 0,05mm ²	3x 0,05mm ²	3x 0,05mm ²
Cable sheath material		PUR	PUR	PUR
Min. bending radius (dynamic)	[mm]	22	22	22
Min. bending radius (static)	[mm]	11	11	11
Weight	[kg]	0.01	0.01	0.02
Protection class IP (sensor, plugged)		67	67	67
Protection class		III	III	III
Drilling emulsion resistance *		yes	yes	yes
Options and their characteristics				
Version with lateral cable outlet		MMS 22-PI1-S-M8-PNP-SA		MMSK 22-PI1-S-PNP-SA
ID		0301166		0301168
LED display in sensor		yes		yes
Heavy duty version		MMS 22-PI1-S-M8-PNP-HD	MMS 22-PI1-S-M8-NPN-HD	MMSK 22-PI1-S-PNP-HD
ID		0301110	0301111	0301112
Housing material		stainless steel	stainless steel	stainless steel
Drilling emulsion resistance *		yes	yes	yes

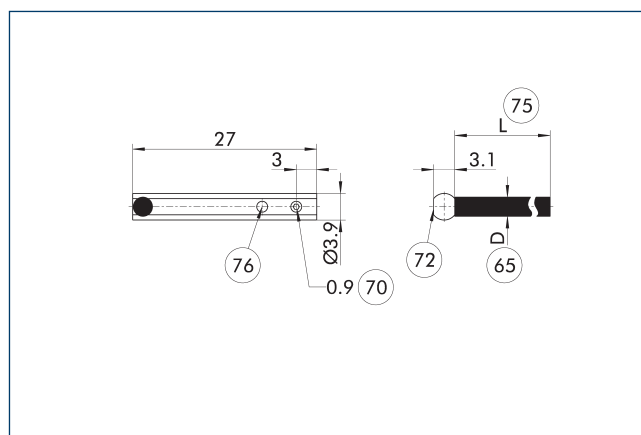
* *Tested cutting emulsions: r.rhenus TU 43P, Motorex Swisscool Magnum UX 550 and Oemeta 760 (1008339).

MMS(K) 22-PI1 main view



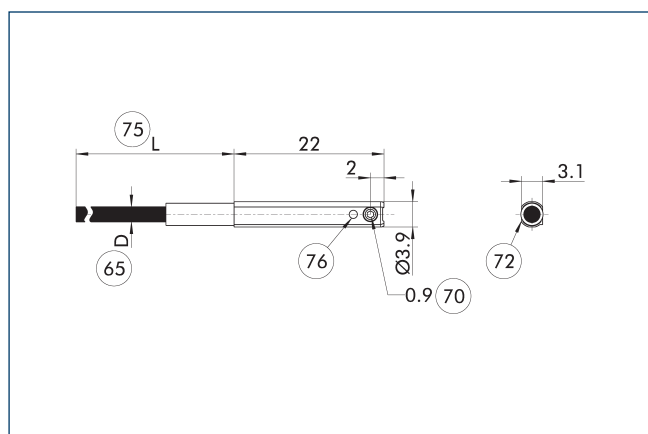
- 65 Cable diameter
- 70 Wrench size
- 72 Active sensor surface
- 75 Cable length
- 76 LED

MMS(K) 22-PI1-SA main view



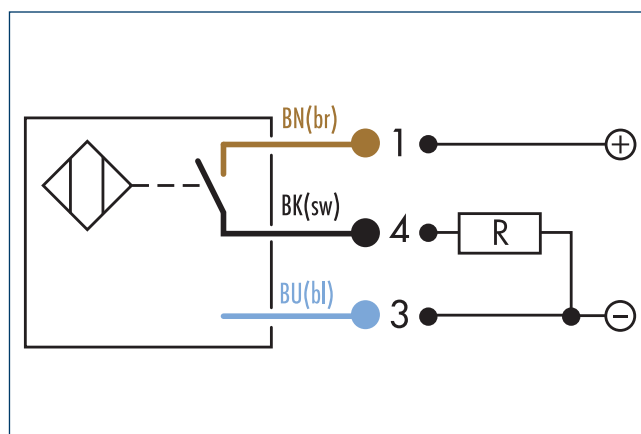
- 65 Cable diameter
- 70 Wrench size
- 72 Active sensor surface
- 75 Cable length
- 76 LED

MMS(K) 22-PI1-HD main view

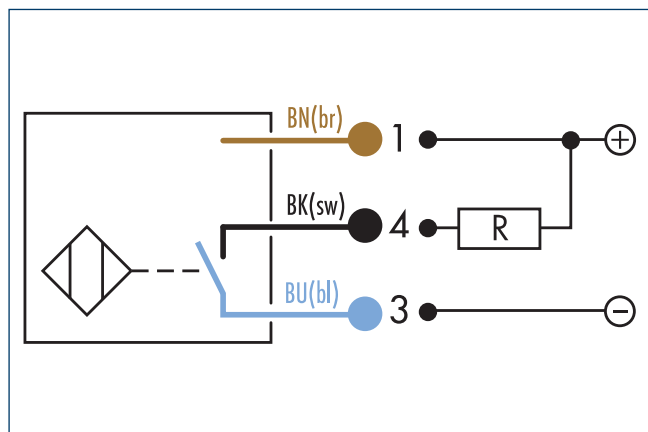


- 65 Cable diameter
- 70 Wrench size
- 72 Active sensor surface
- 75 Cable length
- 76 LED

Wiring diagram closer PNP



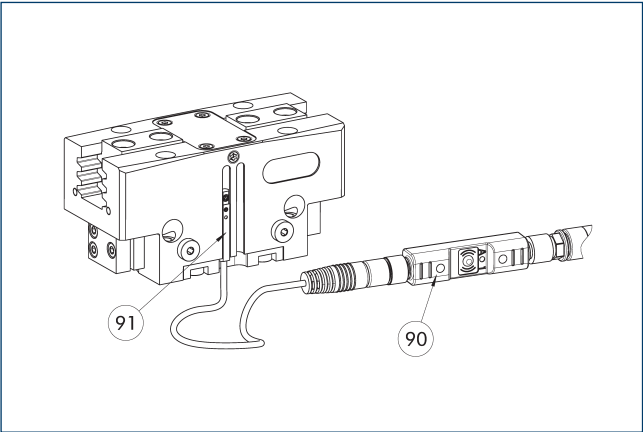
Circuit diagram of NPN closer



MMS 22-PI1

Programmable magnetic switches

Pug-in teaching tool ST



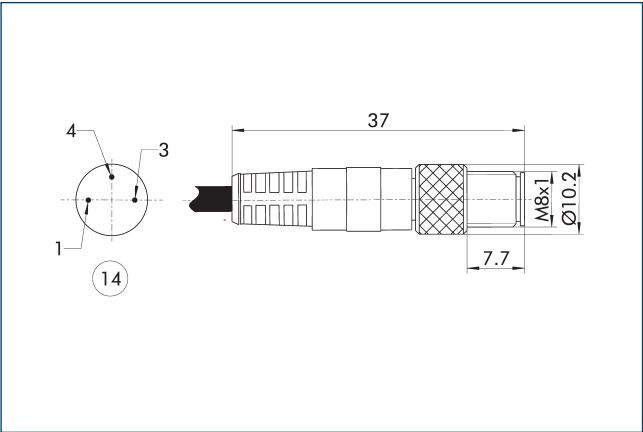
90 Pug-in teaching tool ST 91 Sensor MMS 22-PI...

In addition to the magnetic teach-in tool included in the scope of delivery, the MMS 22-PI sensors can be taught via the plug teach-in tool. The plug teach in tool is inserted into the wiring from sensor to PLC. This makes teaching in possible even in confined spaces on the sensor. The plug teach in tool differs according to the version of the sensor with regard to switching points (1/2) and switching type (PNP / NPN).

Description	ID	
Plug teaching tool		
ST-MMS 22-PI1-PNP	0301025	

- 1 The plug-in teaching tool is only required for teaching in and can be removed from the cabling again after. The sensor maintains its programming.

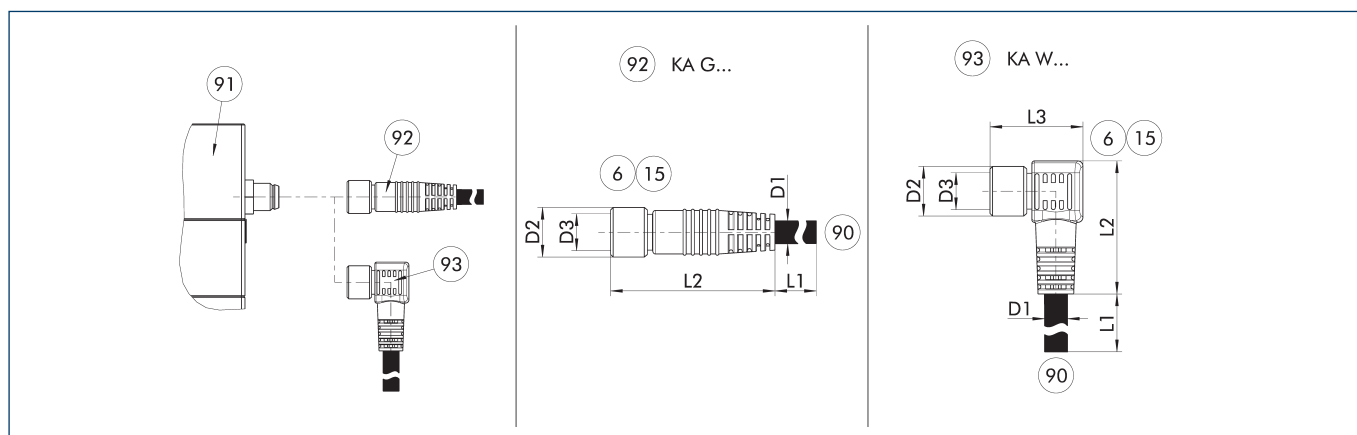
View of M8 connector (3-pin)



14 Connector

This view shows the plug connector on the cable end of the sensor.

Voltage supply/signals connection cable



KA G... Connection cable with straight socket
 KA W... Connection cable with angular socket

⑥ Connection module side
 ⑮ Socket
 ⑨⑩ SAC connection cable with open wire strands

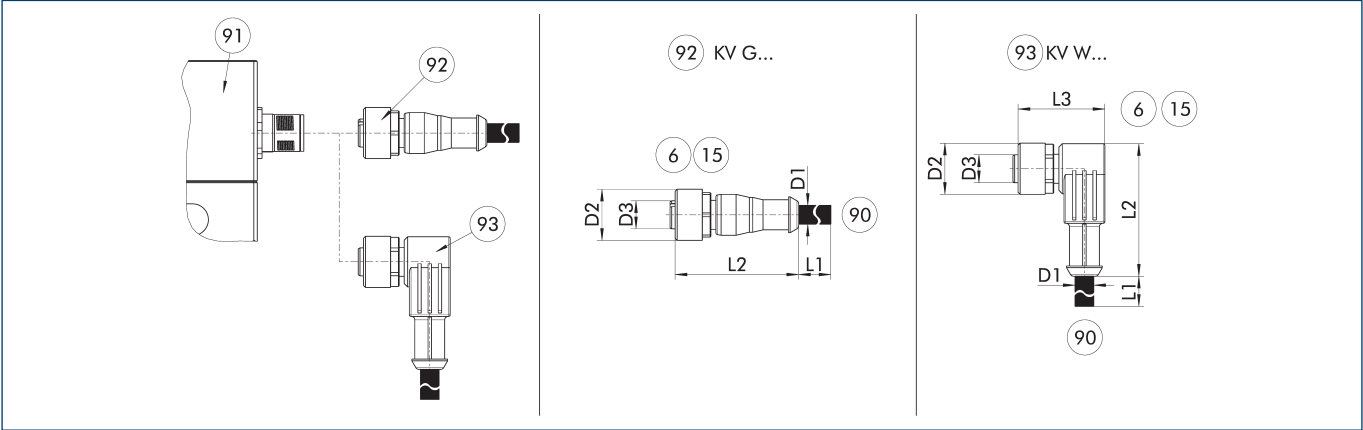
⑨① Connection plug component
 ⑨② Cable with straight female connector
 ⑨③ Cable with angled female connector

The connection cable is ideal for connecting the corresponding components to the controller or the power supply unit. The connection cable has an M8 socket on one side and an open wire strand on the other side for individual connections. The connection cables are suitable for use both in the cable track as well as in torsion applications.

Description	ID	L1 [m]	D1 [mm]	D3	Often combined
Connection cables					
KA BG08-L 3P-0300-PNP	0301622	3	4.5		●
KA BG08-L 3P-0500-PNP	0301623	5	4.5	M8	
KA BW08-L 3P-0300-PNP	0301594	3	4.5		
KA BW08-L 3P-0500-PNP	0301502	5	4.5	M8	

① Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

IO-Link cable extension



The cable extensions are ideal for connecting the relevant components to the control system, or for use as extension cables. The cable extensions have a 4-pin M8 socket with a straight or angled design on the module side and a 4-pin M8 connector with a straight design on the other side. The cable extensions are suitable for use in the cable track and in torsion applications.

- 6

Connection module side
- 15

Socket
- 90

Cable end with straight connector
- 91

Connection plug component
- 92

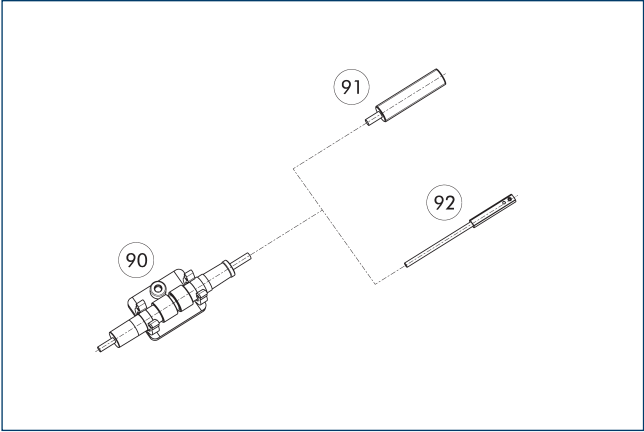
Cable with straight female connector
- 93

Cable with angled female connector

Description	ID	L1 [m]	D1 [mm]	Often combined
Cable extension				
KV BW08-SG08 3P-0030-PNP	0301495	0.3	1.25	
KV BW08-SG08 3P-0100-PNP	0301496	1	1.25	
KV BW08-SG08 3P-0200-PNP	0301497	2	1.25	●

① Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

Clip for connector/socket



- 90

CLI plug bracket
- 91

IN proximity switch
- 92

Magnetic switch MMS

The CLI clip is used for fastening and strain relief for the plug connectors. For example for the sensor and cable extension connection.

Description	ID	
Clip for connector/socket		
CLI-M8	0301463	



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